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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCrory, Chief.

MONTHLY NEWS LETTER

WASHINGTON, D. C., November 20, 1926.

A MEETING OF SECRETARY JARDINE'S ADVISORY COUNCIL IN CONNECTION WITH OUR SURVEY OF THE FARM EQUIPMENT RESEARCH SITUATION WAS HELD AT THIS OFFICE NOVEMBER 17 AND 18 AND THE COUNCIL MEMBERSHIP WAS WELL REPRESENTED. THIS COUNCIL CONSISTS OF EIGHTEEN MEMBERS REPRESENTING THE NATIONAL ASSOCIATION OF FARM EQUIPMENT MANUFACTURERS AND THE A.S.A.E. DURING THE PAST YEAR PROFESSOR J. B. DAVIDSON, OF IOWA STATE COLLEGE, HAS MADE A THOROUGH INVESTIGATION OF THE FARM EQUIPMENT RESEARCH SITUATION. THIS HE HAS DONE BY VISITING ALL OF THE STATES WHERE SUCH WORK IS GOING ON AND DISCUSSING THE PROBLEM WITH THOSE INTERESTED. A LIST OF SOME 400 PROJECTS HAS BEEN COMPILED BY PROFESSOR DAVIDSON ON WHICH RESEARCH IS VERY DESIRABLE.

DURING THE PAST MONTH, MR. S. H. MCCRORY IN COMPANY WITH MR. H. R. TOLLEY OF THE BUREAU OF AGRICULTURAL ECONOMICS, MADE A TRIP TO TEXAS FOR THE PURPOSE OF STUDYING LARGE SCALE COTTON PRODUCTION IN THE VICINITY OF CORPUS CHRISTI, TEXAS, AND CONFERRING WITH THE TEXAS A. AND M. COLLEGE WITH REGARD TO AN INVESTIGATION OF THIS KIND. A COOPERATIVE PROJECT HAS BEEN DRAWN UP BETWEEN THIS BUREAU, THE BUREAU OF AGRICULTURAL ECONOMICS, AND THE TEXAS A. AND M. COLLEGE COVERING THIS STUDY WHICH SEEKS TO DETERMINE THE ORGANIZATION AND ENGINEERING FACTORS THAT GOVERN COTTON PRODUCTION ON A LARGE SCALE. THIS IS ONE OF A SERIES OF STUDIES THAT HAVE FOR THEIR ULTIMATE OBJECT THE DEVELOPMENT OF MORE ECONOMICAL METHODS OF PRODUCING COTTON.

MR. MCCRORY ALSO VISITED THE AGRICULTURAL EXPERIMENT STATION AT SPUR, TEXAS, AND INSPECTED THE EROSION AND MOISTURE CONSERVATION STUDY THAT THE TEXAS AGRICULTURAL EXPERIMENT STATION HAS IN PROGRESS AT THAT POINT. LARGE SCALE COTTON PRODUCTION ON THE PLAINS OF TEXAS WAS ALSO STUDIED AT SPUR AND LUBBOCK, TEXAS.

ON THIS TRIP, MR. MCCRORY ALSO STOPPED AT GREENVILLE, MISSISSIPPI, FOR THE PURPOSE OF OBSERVING THE OPERATION OF THE BERRY COTTON PICKER, AND AT TALLULAH, LOUISIANA, FOR THE PURPOSE OF CONFERRING WITH MR. ELMER JOHNSON AND MR. CHARLES A. BENNETT IN REGARD TO THE PROJECT ON COTTON DRYING WHICH IS BEING CARRIED ON AT THAT POINT. ON THE RETURN TRIP HE SPENT A DAY AT LIBERAL, KANSAS, THE HEADQUARTERS FOR THE GRAIN SORGHUM HARVESTING STUDY, CONFERRED WITH MEMBERS OF THE PARTY AND OBSERVED THE OPERATION OF COMBINES.

MR. B. S. CLAYTON HAS RETURNED TO HIS HEADQUARTERS AT CLEVELAND, MISSISSIPPI, AND IS ENGAGED ON THE COMPLETION OF THE REPORT ON THE WOLF RIVER PROJECT. MR. MCCRORY SPENT A FEW HOURS WITH HIM WHILE ON HIS SOUTHERN TRIP.

DURING OCTOBER, MR. C. E. RAMSER VISITED MR. R. A. NORTON AND INSPECTED THE WORK HE IS DOING IN THE VICINITY OF URBANA, ILLINOIS. HE ALSO CONFERRED WITH OFFICIALS OF THE UNIVERSITY OF ILLINOIS REGARDING THE COOPERATIVE WORK.

MR. F. O. BARTEL REPORTS THAT THE MOST OUTSTANDING FACT BROUGHT OUT BY THE EROSION AND RUN-OFF STUDIES CONDUCTED BY THIS DIVISION AND THE STATE OF NORTH CAROLINA IS THAT THREE-FOURTHS OF THE ANNUAL EROSION TAKES PLACE DURING JUNE, JULY, AND AUGUST, SHOWING THAT A COVER CROP WILL ONLY BE PARTIALLY SUCCESSFUL IN PREVENTING EROSION UNLESS IT IS ONE WHICH GROWS THROUGHOUT THE SUMMER MONTHS. CLEAN CULTIVATED CROPS SUCH AS COTTON AND CORN CAN NOT BE DEPENDED ON TO HOLD THE SOIL. PROPER TERRACING IS UNDOUBTEDLY THE MOST EFFECTIVE MEANS OF CONTROLLING EROSION.

MR. YARNELL CONTINUED THE WORK ON THE FLOW OF WATER AROUND BENDS AT IOWA CITY. MR. E. W. JAMES, CHIEF, DIVISION OF DESIGN, INSPECTED THE WORK IN PROGRESS LAST MONTH.

MR. G. A. MITCHELL HAS BEEN ENGAGED IN CLOSING UP THE YEAR'S WORK. HE HAS ALSO BEEN BUSY WITH THE PLANS FOR A SEWAGE IRRIGATION SYSTEM TO BE INSTALLED ON THE NEW UNIT OF THE NEW JERSEY HOME FOR FEEBLE-MINDED WOMEN AT VINELAND.

MR. G. R. BOYD HAS BEGUN A TRIP TO THE FAR WEST IN THE INTEREST OF PYROTOL WHICH WILL TAKE HIM TO THE BARKSDALE, WISCONSIN, AND DUPONT, WASHINGTON, CARTRIDGING PLANTS AS WELL AS ENABLE HIM TO CONFER WITH OUR DISTRIBUTING AGENCIES IN ALL OF THE NORTHWESTERN STATES.

PRODUCTION OF PYROTOL CONTINUED AT A SATISFACTORY RATE AT ALL PLANTS DURING THE MONTH. AT BARKSDALE, WIS., A RESERVE OF ONE-HALF MILLION POUNDS HAS BEEN BUILT UP AND THE PLANT HAS BEEN CLOSED UNTIL THIS SUPPLY HAS BEEN USED UP OR UNTIL OPERATIONS ARE RESUMED IN THE SPRING. AT DUPONT, WASH., ALL ORDERS ON HAND WERE SHIPPED OUT AND THE ACCUMULATION OF A RESERVE SUPPLY HAS BEEN BEGUN. SHIPMENTS FROM REPAUNO WERE NORMAL DURING THE MONTH. MR. N. A. CHESNUTT SPENT SEVERAL DAYS AT TULLYTOWN, PA., INSPECTING PYROCOTTON WHICH HAS RECENTLY BEEN EXCHANGED FOR DYNAMITE. MR. R. L. HANSON HAS BEEN TEMPORARILY TRANSFERRED TO OLD HICKORY, TENN., TAKING CHARGE OF OPERATIONS AT THAT PLANT FOR MR. F. R. KOSSA, WAR MATERIALS DIVISION, WHO IS LEAVING THE BUREAU.

MR. W. W. McLAUGHLIN VISITED LOS ANGELES, CALIF., AND LAS VEGAS, NEVADA, DURING OCTOBER TO CONFER WITH MR. H. F. BLANEY AND W. L. STOCKWELL, AND TO ATTEND THE SESSION OF THE CALIFORNIA ECONOMIC RESEARCH COUNCIL AT LOS ANGELES. MR. McLAUGHLIN ALSO VISITED THE SACRAMENTO-SAN JOAQUIN DELTA REGION.

MR. H. F. BLANEY PRESENTED A PAPER AT THE "WINNING OF THE WEST" CONFERENCE HELD IN LOS ANGELES OCTOBER 14 - 15, CALLED BY THE LOS ANGELES CHAMBER OF COMMERCE AS AN OPEN FORUM WHERE REPRESENTATIVES OF ALL THE WESTERN STATES MIGHT PRESENT THEIR VIEWS ON A DEFINITE PLAN OF DEVELOPMENT OF THE WATER RESOURCES OF THE WEST.

During October, Mr. C. E. Ransberger visited Mr. R. A. Norton and was
instructed the work he is doing in the vicinity of Urbana, Illinois. He also
conferred with officials of the University of Illinois regarding the current
active work.

Mr. F. O. Bartel reported that the most outstanding task brought
out by the erosion and run-off studies conducted by this Division and the
State of North Carolina is that the erosion of the annual erosion takes
place during June, July, and August, showing that a cover crop will only be
partially successful in preventing erosion unless it is one which grows
throughout the summer months. Other cultivated crops such as cotton and
corn can not be depended on to hold the soil. Proper terracing is un-
doubtedly the most effective means of controlling erosion.

Mr. Farnell continued the work on the flow of water around winds
at Iowa City. Mr. F. A. James, Chief, Division of Design, inspected the
work in progress last month.

Mr. G. A. Mitchell has been engaged in clearing up the year's work.
He has also been busy with the plans for a sewage irrigation system to be
installed on the new unit of the New Jersey Home for Feeble-minded Women at
Belleville.

Mr. G. R. Boyd has been working on the plan for the interest of
pyrolysis which will take him to the Parkdale, Wisconsin, and Detroit,
Michigan, starting early as well as enable him to confer with our
tributary agencies in all of the Northwestern States.

Production of pyrolysis continued at a satisfactory rate at all plants
during the month. At Parkdale, Michigan, a record of over half a million pounds
has been built up and the plant has been cleared with this supply has been
used in our unit operations and received in the morning. At Detroit, Michigan,
all orders on hand were shipped out and the accumulation of a reserve supply
has been begun. Shipments from Parkdale were normal during the month.

Mr. J. A. Gresham spent several days at Parkdale, Michigan, inspecting the
unit which has recently been changed for capacity. Mr. R. L. Hanson has
been temporarily transferred to the Chicago, Illinois, taking charge of the
unit at that plant. Mr. R. R. Koss, San Francisco Division, was in
leaving the Bureau.

Mr. W. W. McLaughlin visited Los Angeles, California, and Las Vegas,
Nevada, during October to confer with Mr. C. E. Ransberger and Mr. J. A. Gresham,
and to attend the session of the California Economic Research Council at
Los Angeles. Mr. McLaughlin also visited the Sacramento-San Joaquin Delta
Region.

Mr. H. F. Clancy presented a paper at the meeting of the West
Conference held in Los Angeles October 15-16, 1935, called by the Los Angeles
Chapter of Commerce as an open forum where representatives of all the
Western States might present their views on a definite plan of development
of the water resources of the West.

MR. D. W. BLOODGOOD STATES THAT COOPERATIVE BULLETIN 149 OF THE NEW MEXICO STATION, "NET REQUIREMENTS OF CROPS FOR IRRIGATION WATER IN THE MESILLA VALLEY, NEW MEXICO," HAS BEEN TRANSLATED INTO SPANISH FOR PUBLICATION BY THE MEXICAN GOVERNMENT.

MR. A. L. FELLOWS AND MR. L. M. WINSOR SPENT SOME TIME TOGETHER ON THE GREAT PLAINS ON THEIR RESPECTIVE PROJECTS. THE MOST STRIKING POINT BROUGHT OUT IN THE KANSAS PUMPING STUDIES IS THAT WITH THE LOW LIFTS PREVAILING ALONG THE ARKANSAS VALLEY, LANDS CAN BE SATISFACTORILY IRRIGATED WITH AN ADEQUATE MONTHLY SUPPLY OF WATER AT A CAPITAL COST OF FROM \$10 TO \$15 PER ACRE AND AN OPERATING COST OF APPROXIMATELY \$1 PER ACRE.

MR. R. G. HEMPHILL HAS RECEIVED FROM MR. WEST, HIS ASSISTANT ON THE RICE IRRIGATION INVESTIGATION AT BEAUMONT, TEXAS, THE REPORT ON THE SEASON'S WORK. ON THE NINE FIELDS UNDER INVESTIGATIONS, CONTAINING 1278 ACRES, THE AVERAGE DEPTH OF IRRIGATION WATER APPLIED DURING THE SEASON WAS 21.06 INCHES.

MR. HEMPHILL STATES FURTHER THAT ALL RECORDS TO DATE OF VERTICAL SILT CURVES ARE BEING WORKED OVER TO DETERMINE THE RATIO BETWEEN THE SILT PERCENTAGE AT THE SURFACE AND THE MEAN PERCENTAGE FOR THE VERTICAL. WHERE THE VELOCITIES ARE VERY HIGH, ONLY SURFACE SAMPLES CAN BE TAKEN; CONSEQUENTLY SEARCH IS BEING MADE FOR A FACTOR WHICH WILL GIVE THE MEAN PERCENTAGE FROM THE SURFACE PERCENTAGE.

MR. L. T. JESSUP ATTENDED THE OREGON RECLAMATION CONGRESS AT HOOD RIVER OCTOBER 15-17, AND GAVE AN ADDRESS ON DRAINAGE.

MR. JAMES C. MARR PREPARED AND DELIVERED AN ADDRESS ON "PUMPING FROM WELLS FOR THE DUAL PURPOSE OF DEVELOPING WATER FOR IRRIGATION AND FOR DRAINAGE AS APPLIED TO IDAHO CONDITIONS" BEFORE THE KIWANIS CLUB OF BOISE, IDAHO.

MR. R. L. PARSHALL HAS CONTINUED TESTS ON THE CONTROL WEIR, WHICH WAS FORMERLY CALLED THE DOUBLE-HUMP FLUME AND LATER THE HUMP FLUME. ALL OBSERVATIONS HAVE INDICATED THAT THIS DEVICE POSSESSES THE ABILITY TO WITHSTAND SUBMERGENCE TO A POINT BEYOND THAT OF THE IMPROVED VENTURI FLUME.

MR. COLIN A. TAYLOR HAS TAKEN A LARGE NUMBER OF ADDITIONAL SOIL SAMPLES IN THE COOPERATIVE WORK IN SAN DIEGO COUNTY, CALIF., AS THE FALL OF THE YEAR SEEMS TO BE THE CRITICAL PERIOD IN THE LOCAL IRRIGATION PRACTICE. IN THE FALL, ALL OF THE RESERVE SUPPLY OF WATER IN REACH OF THE ROOTS SEEMS TO HAVE BEEN DEPLETED AND WHATEVER MOISTURE THE TREES GET MUST BE SUPPLIED BY IRRIGATION. IRRIGATION PRACTICE WHICH WETS ABOUT 25% OF THE ROOT ZONE HAS NO MARGIN OF SAFETY SUCH AS THAT WHERE AN EXCESS OF WATER IS USED, AND ANY DELAY CAUSES THE TREES TO SUFFER.

MR. L. M. WINSOR SPENT MOST OF OCTOBER IN THE MIDDLE WEST. A SPECIAL METHOD OF GROUND WATER DEVELOPMENT IS BEING PERFECTED IN KANSAS APPLICABLE TO SHALLOW FORMATIONS SUCH AS ARE FOUND ALONG THE ARKANSAS VALLEY IN KANSAS AND OKLAHOMA, THE METHOD HAVING BEEN DEVELOPED DURING A LONG SERIES

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OF YEARS BUT IS NOW BEING STANDARDIZED BY THE STATE COMMISSIONER OF IRRIGATION. THE METHOD CONSISTS OF SINKING A SERIES OF SHALLOW WELLS IN A LINE THROUGH THE SAND AND GRAVEL FORMATIONS TO THE UNDERLYING SHALE, THE INSTALLATION OF A 16-INCH PERFORATED CASING IN EACH, AROUND WHICH IS DEPOSITED A 4- OR 6- INCH LAYER OF FINE GRAVEL, AS THE OUTER TEMPORARY CASING USED IN SINKING THE WELL IS DRAWN. THREE, FOUR, SIX AND EIGHT WELLS ARE SUNK IN LINE ABOUT 40 FEET APART. THE WATER IS BROUGHT TO THE SURFACE BY MEANS OF A HORIZONTAL CENTRIFUGAL PUMP PLACED 12 INCHES ABOVE THE WATER TABLE, WITH SUCTION PIPE EXTENDING IN EACH DIRECTION INTO THE SEVERAL WELLS.

MR. C. D. KINSMAN HAS JUST RETURNED FROM A TRIP TO KANSAS WHERE HE HAS BEEN INVESTIGATING THE USE OF THE COMBINE HARVESTER FOR GRAIN SORGHUMS.

MESSRS. BETTS AND KELLEY SPENT A WEEK AT PAINTER, VA., TESTING THE VENTILATION OF A THREE STORY SWEET AND WHITE POTATO STORAGE HOUSE ERECTED BY PRIVATE PARTIES FROM PLANS PREPARED IN THE DIVISION. THE BUILDING WAS ERECTED OF CINDER CONCRETE BLOCK (A NEW MATERIAL IN THIS TYPE OF BUILDING) WITH STEEL COLUMNS AND GIRDERS, A MUCH MORE SUBSTANTIAL AND PERMANENT CONSTRUCTION THAN COMMONLY EMPLOYED IN SUCH BUILDINGS. THE TESTS, DATA FROM WHICH HAVE NOT BEEN TABULATED AND ANALYZED, INDICATE THAT, BY PROPER OPERATION, FAIRLY CONSTANT TEMPERATURE AND HUMIDITY CONDITIONS MAY BE MAINTAINED WITHIN THE STRUCTURE. IT IS PLANNED TO MAKE FURTHER TESTS IN JANUARY TO OBSERVE THE OPERATION DURING LOW OUTSIDE TEMPERATURE.

MR. J. T. BOWEN HAS BEGUN THE PREPARATION OF A SERIES OF BULLETINS ON MECHANICAL REFRIGERATION. THE FIRST OF THE SERIES WILL RELATE TO THE ELEMENTARY PRINCIPLES OF MECHANICAL REFRIGERATION AND THIS WILL BE FOLLOWED BY BULLETINS ON THE APPLICATION OF REFRIGERATION TO DAIRY PRODUCTS, POULTRY PRODUCTS, VEGETABLES, FRUITS, ETC.

MR. CHARLES A. BENNETT HAS STARTED ON AN EXTENDED TRIP THROUGH LOUISIANA, ARKANSAS, TENNESSEE, AND MISSISSIPPI, FOR THE PURPOSE OF SECURING INFORMATION IN REGARD TO PRACTICES IN COTTON GINS AND COTTON SEED OIL MILLS.

MR. S. J. DENNIS HAS COMPLETED PRELIMINARY INVESTIGATIONS AT ARLINGTON FARM IN PRECOOLING SWEET CORN AND LETTUCE, USING THE PORTABLE PRECOOLING PLANT DESIGNED BY HIM AND CONSTRUCTED AT THE DEPARTMENT SHOPS. THIS PLANT EMPLOYS ICE AS A REFRIGERANT, AND PRECOOLS BY MEANS OF A HEAVY SPRAY OF ICE WATER CIRCULATED BY A CENTRIFUGAL PUMP. THE PRELIMINARY WORK SHOWS THAT PRODUCE CAN BE PRECOOLED BY THIS SYSTEM MUCH MORE RAPIDLY AND EFFECTIVELY THAN IS POSSIBLE BY COLD AIR. THE PLANT IS CAPABLE OF PRECOOLING CARLOAD QUANTITIES, AND WILL PROBABLY BE USED IN CALIFORNIA DURING THE COMING SEASON. IN OCTOBER, MR. DENNIS SPENT A WEEK AT THE BUREAU OF ENTOMOLOGY FIELD STATION AT MELROSE HIGHLANDS, MASSACHUSETTS, MAKING TESTS OF HIGH POWER SPRAYING EQUIPMENT AND ADVISING REGARDING PROPOSED CHANGES IN SAME.

MR. R. G. MARSDEN CONTINUED HIS STUDY OF DRAINAGE DISTRICTS IN THE SOUTH ATLANTIC STATES AND HAS ALSO SECURED INFORMATION IN REGARD TO STORM TIDES DURING THE RECENT TROPICAL HURRICANE IN FLORIDA.

